

REMARKS

Claims 1-22 currently appear in this application. The Office Action of May 29, 2002, has been carefully studied. These claims define novel and unobvious subject matter under Sections 102 and 103 of 35 U.S.C., and therefore should be allowed. Applicants respectfully request favorable reconsideration, entry of the present amendment, and formal allowance of the claims.

Election/restriction

It is noted that the restriction requirement is made final. Claims 10-22 will be cancelled upon allowance of claims 1-9 unless there has been a rejoinder of the claims.

Rejections under 35 U.S.C. 112

Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing particularly point out and distinctly claim the subject matter which applicant regards as the invention.

This rejection is respectfully traversed.

Claim 1 has been amended to recite that "1-40 weight percent" of the total fiber content, and the dry matter in the binder is from 0.5 to 15 weight percent of the amount of dry matter applied to the surface.

Art Rejections

Claims 1-9 are rejected under 35 U.S.C. 102(b)
as being clearly anticipated by WO 95/18886.

This rejection is respectfully traversed.

Claim 1 has been amended to recite that the thermobonding fibers comprise 3-25 weight percent of the total fiber content, and the amount of dry matter in the binder is from about 0.5 to 15 weight percent. Basis for these amendments is found in the original parent application in claims 7 and 8, respectively, referring to WO 95/18886. The combination of claims 7 and 8 of the parent application disclose that the content of thermally bonded material can be as low as 3 weight percent and as high as 25 weight percent.

It should be noted that a printing error occurs in original claim 8 in which it was stated that the binder dosage should be 5-20% g/m². However, it should be clear to one skilled in the art that the dosage of the binder is 5-20 g/m² surface.

Claims 1-9 are rejected under 35 U.S.C. 103(a)
as being unpatentable over the admitted prior art in view of either LeVan or Frankosky et al.

This rejection is respectfully traversed.

First of all, it should be noted that the acknowledged prior art (APA) teaches two different methods of binding

a dryformed fibrous web based upon dryformed cellular web fibers. The first method comprises applying a binder material by spraying a binder which is normally of the latex type onto the web. After this, the web is placed onto a traveling wire and led through a tunnel oven for drying the binder. The web is then transferred to a further wire to have binder material applied by spraying binder material to the other side of the web material. After that, the web is again led through a tunnel oven while the web is carried on a traveling wire. After this step, the web is self-supporting. This method is for manufacturing a dryformed fibrous material.

The second method comprises using binding fibers, which are also called thermobonding fibers. These fibers are admixed into the cellulose fibers. The dryformed web material is then fixed as it is led through a heating zone activating the binding fibers.

As disclosed in the present application, the spraying procedure normally provides a sealed or closed surface if a sufficient amount of binder is supplied when a product is manufactured which has a basis weight of more than 120 grams/m². The prior art techniques also said that using binder fibers makes it possible to produce coherent products having a basis weight of up to 800 grams/m². However, there is nothing in the present

application that describes a technique in which a combination of the two binding methods is used when manufacturing a dryformed fibrous web material based on dryformed cellulose fibers.

There has been a long-felt need for a method for making dryformed fibrous web materials based on dryformed cellulose fibers having a large amount of very short fibers (dust) to produce a product in which fiber leakage is minimized and which product could be manufactured at a reasonable cost. Even though this need has been long-felt, there has heretofore been no disclosure or suggestion for combining the two techniques, prior to the present invention.

It should be appreciated that it is difficult, when manufacturing a dryformed fibrous web material, to apply binder fibers to the material and also to spray the aqueous binder onto opposite sides of the material. This combination of prior art techniques would require several tunnel ovens, resulting in a very complicated process and apparatus for manufacture. Moreover, the combination of the two prior techniques involves a risk that the binder applied and activated in a preceding step will deteriorate when the binder is activated in a subsequent step. Thus, even when those skilled in the art face the dust problem and the desire to prevent leakage of small

cellulose fibers from the material, there is no motivation to combine the methods when working with dryformed cellulose fibers.

Frankosky only mentions that it is possible to apply latex to the product. However, Frankosky et al. merely speak of polyester fiber filled batts.

Manufacturing polyester fiber filled batts is quite different from manufacturing dryformed web materials based upon cellulose fibers, because the fiber material has different characteristics. LeVan also relates to polyester fiber filled batts, and, accordingly, this technique is associated with different problems.

None of the prior art techniques discloses application of binder material in the amounts stated in the present claims to the surface of the formed web. Neither LeVan nor Frankosky has any explanation relating to the manufacturing of dryformed fibrous web materials based upon dryformed cellulose fibers. Therefore, there is no motivation to combine these references with the APA, since that one skilled in the art would not look to methods of manufacturing polyester fiber filled batts to make a dryformed cellulose web.

More specifically, LeVan deals with a product having outer layers comprising a mixture of long polyester fibers (fiberfill) and heat activatable binder

fibers. LeVan also mentions spraying a binder onto the surface to retain fibers within the material. However, it is also mentioned that spraying binder material onto the surface is used to seal the outer surface (column 1, lines 53-54). When the outer surface is sealed, it is impossible to have liquid enter into the product, which is desirable for a product manufactured by the present invention. The product of the present invention, unlike the product made by LeVan, is specifically intended to be used for absorbent products.

Moreover, it is mentioned that LeVan use card-formed webs (column 3, lines 14-15). This also occurs with regard to the length of the fibers, which is stated to be 1.5 inch (column 3, line 33). The binder is used in amounts of 15+ 3% (column 5, lines 31-33). This is contrary to the method according to the present invention in which dryforming is used for forming a web, which is quite different from manufacturing a batt from multiple layers of card-formed web. Contrary to the method of the present invention, LeVan teaches that the product is dried and the binder activated in an oven at 150°C (column 3, lines 40-43).

Even though LeVan in principle teaches the use of a combination of binding fibers and latex in order to bind the product, there is no disclosure that the binding

is used to obviate binding of dust as in the present invention. One would not consider fibers of a length of 1.5 inch (38 mm) to be dust. What LeVan aims to do is to prevent the fibers from working themselves out of the batt when the batt is in use.

The present invention is designed to solve a different problem. In the present invention, fibers having a length as small as 0.1 mm are used, which fibers are generally considered to be dust. It is very difficult to bind these short fibers using only binding fibers. However, it is necessary to use binding fibers in order to produce the absorbent capability of the product formed. Accordingly, the binder applied to the surfaces of the product will minimize dust during manufacturing of the product due to the suction effect in different handling equipment. The present invention does not seal the surface in the same way as the sealing is established in LeVan. The product of the present invention requires a surface having openings which permit liquids to enter into the product for absorption therein, and which to some extent also allows the short fibers to leave the product as dust. It is clear that LeVan does not teach or suggest a method for manufacturing an absorbent product, because the LeVan process is designed to hold the shorter fibers within the batt.

Frankosky et al. deal with the same problem as LeVan. Frankosky et al. also disclose a method for making a bonded batt consisting of a mixture of polyester fiberfill and binding fibers upon which binder is sprayed onto the surface in order to prevent fiber leakage through the surface of the mat (column 1, lines 57-67; column 2, lines 10-19; column 2, lines 29-41; column 6, lines 41-52).

Contrary to LeVan, Frankosky et al. do not teach a mixture of polyester fibers and binding fibers in the surface layer. Frankosky et al. teach a homogeneous mixture of these two types of fibers throughout the product.

According to Frankosky et al., evaporation of water from the binder and activation of the binder fibers can be effected in one process at a temperature of 150°C (column 2, lines 27-41; column 4, lines 14-62, and claim 1). Frankosky et al. also teach the use of card-formed layers (column 2, lines 31-32) and the use of fibers having a length between $\frac{3}{4}$ and 3 inches (column 3, lines 10-11 and column 8, lines 15-27). Accordingly, Frankosky et al. teach a method which is different from the dry-forming technique of the present invention, and also a use of fibers only which have a substantially greater

length than the length of cellulosic fibers used in the present invention.

Frankosky et al. teach that the content of binding fibers is between 4 and 30%, as in claim 1.

Frankosky et al. explain the surface treatment in more detail at column 2, lines 45-52. The surface is said to be sealed in order to prevent the long polyester fibers from working themselves out of the product when the product is used. The surface is smoothed by passing the product around or through heated rolls, which also calibrates the product. It is clear that the Frankosky et al. product is not suitable for absorbent products, as the surface of the Frankosky et al. product is sealed.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of either LeVan or Frankosky et al. and Kennette et al.

This rejection is respectfully traversed.

Kennette et al. disclose a fabric having wiping properties. Kennette et al. disclose a product primarily based on rayon staple fibers which are different from dryformed cellulose fibers. Kennette et al. teach using fibers having lengths of $\frac{1}{2}$ to 3 inches (column 3, lines 22-24 and column 4, line 3). These fibers are hydro entangled by means of water jets (column 2, lines 9-13). After this process, the formed web is dried. When the

fibrous web has been entangled and dried, it is led to a bonding station wherein an aqueous binder is applied to the web (column 2, lines 60-64). This method is used in order to obtain a product in which a sufficient amount of resin binder, e.g., up to about 10%, in order to impart web collapse resistance to the fabric (column 3, lines 41-45). Accordingly, Kennette et al. teach a fixation of the fibers in the positions they have obtained through the hydroentanglement. There is no teaching or suggestion of binding dust.

As the Federal Circuit stated in *In re Lee*, 61 USPQ2d 1430 (January 18, 2002, Fed. Cir.), "As applied to the determination of patentability *vel non*, when the issue is obviousness, 'it is fundamental that rejections under 35 U.S.C. 103 must be based on evidence comprehended by the language of that section.' *In re Grasselli*, 53 USPQ2d 1769, 1774 (Fed. Cir. 2000)... When patentability turns on the question of obviousness, the search for an analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness. See, e.g., *McGinley v. Franklin Sports, Inc.*, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001) ('the central question is whether

there is a reason to combine [the] references,' a question of fact drawing on the *Graham* factors."

'The factual inquiry whether to combine references must be thorough and searching.' *Id.* This precedent has been reinforced in myriad decisions, and cannot be dispensed with, *See, e.g., Brown & Williamson Tobacco Corp. v. Philip Morris, Inc.*, 56 USPQ2d 1456, 1459 (Fed. Cir. 2000). ('a showing of a suggestion, teaching, or motivation to combine the prior art references is an "essential component of an obviousness holding"') (quoting *C. R. Bard, Inc. v. M3 Systems, Inc.* 48 USPQ2d (Fed. Cir. 1998)) The Court went on to quote *In re Dembiczaik*, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999), "Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references."

There is a requirement for specificity in combining references, *See, In re Kotzab*, 55 USPQ2d 13134, 1317 (Fed. Cir. 2002) ("particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed.").

The Examiner has shown no motivation to combine the two separate steps of the admitted prior art with any of the references cited herein.

It is noted that the prior art made of record and not relied upon is merely pertinent to Applicant's disclosure.

In view of the above, it is respectfully submitted that the claims are now in condition for allowance, and favorable action thereon is earnestly solicited.

Respectfully submitted,

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1. (Amended) A process for manufacturing an absorbent dryformed paper web comprising:

 laying a web of cellulose fibers, admixed with thermobonding fibers, onto a forming wire, wherein the thermobonding fibers comprise about ~~1—40% — 25 wt%~~ of the total fiber content;

 applying a binder, wherein the amount of dry matter in the binder is from about 0.5 - 15 wt% and the amount of dry matter applied to the surface of the web is from about 0.5 - 40 g. of dry matter per square meter of web surface; and

 heating the web to a temperature sufficient to melt the thermobonding fibers and increase the tensile strength of the finished product.

2. (Amended) The process according to claim 1 wherein the amount of dry matter in the binder is from about 0.5 - ~~10~~15 wt%.

8. (Amended) The process according to claim 2 wherein said web comprises about ~~20 — 35% — 10 — 25 wt%~~ thermobonding fibers and the amount of binder applied to the surface of the web is about 0.5 - ~~5.~~010 grams per square meter of web surface.

9. (Amended) The process according to claim 2 wherein said web comprises about 3 - 7 wt% of thermobonding fibers and the amount of binder applied to the surface of the web is about 5 - 20 grams per square meter of web surface.